Public Disclosure Authorized

Public Disclosure Authorized

WPS 1850

POLICY RESEARCH WORKING PAPER 1850

Determinants of Intra-Industry Trade between East and West Europe

Chonira Aturupane
Simeon Djankov
Bernard Hoekman

There is a good deal of intra-industry trade between nations in Central and Eastern Europe and the European Union. Most of it is vertical (the exchange of similar goods of different quality).

The World Bank
Development Research Group
November 1997

POLICY RESEARCH WORKING PAPER 1850

Summary findings

Intra-industry trade as a share of total trade between Central and Eastern European nations and the European Union (EU) is among the highest of all the EU's bilateral trade flows.

Aturupane, Djankov, and Hoekman break down data on these trade flows into horizontal and vertical components and investigate the determinants of each.

They find that vertical intra-industry trade (the exchange of similar goods of different quality) accounts for 80 to 90 percent of total intra-industry trade. It is positively associated with product differentiation, labor intensity of production, economies of scale, and foreign direct investment.

Controlling for country effects, they find a statistically significant positive association between horizontal intra-industry trade (the exchange of close substitutes of similar quality) and foreign direct investment, product differentiation, and industry concentration. They find a significant negative relationship for economies of scale and labor intensity.

These results do not hold if they do not control for country effects, suggesting that country-specific factors are key determinants of horizontal intra-industry trade.

This paper — a product of the Development Research Group — is part of a larger effort in the group to analyze the role of trade and foreign investment in the process of transition in Eastern Europe. Copies of the paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Jennifer Ngaine, room N5-056, telephone 202-473-7947, fax 202-522-1159, Internet address trade@worldbank.org. November 1997. (32 pages)

The Policy Research Working Paper Series disseminates the findings of work in progress to encourage the exchange of ideas about development issues. An objective of the series is to get the findings out quickly, even if the presentations are less than fully polished. The papers carry the names of the authors and should be cited accordingly. The findings, interpretations, and conclusions expressed in this paper are entirely those of the authors. They do not necessarily represent the view of the World Bank, its Executive Directors, or the countries they represent.

Produced by the Policy Research Dissemination Center

Comments Welcome

Determinants of Intra-Industry Trade between East and West Europe

Chonira Aturupane*

Simeon Djankov**

Bernard Hoekman***

JEL code: F13; Keywords: Intra-industry trade, foreign direct investment, Eastern Europe

* Stanford University; ** World Bank and University of Michigan; *** World Bank and CEPR.

Corresponding author: bhoekman @worldbank.org; tel: 202-473-1185. Address: World Bank, 1818H St. NW, Washington DC 20433. We are grateful to Jim Tybout and Alan Winters for helpful suggestions.

Summary

There is a large empirical literature that investigates the determinants of intra-industry trade (IIT). Most studies find strong support for country effects such as size, distance, and relative income levels, but less evidence for the effects of the various industry-specific variables that theory suggests should be important. This is puzzling as most attempts to test theories that give rise to IIT focus on exchanges between highly developed economies. Given the relatively high degree of similarity of industrialized countries, one would expect to see strong support for the theory as regards industry-specific determinants of IIT.

The existing literature focuses on trade flows that occur in the context of a relatively stable environment, with little change occurring in explanatory variables such as market structure or the size of technology and capital flows. In this paper we analyze the determinants of IIT between the European Union (EU) and eight Central and Eastern European countries (CEECs) during the 1990-95 period. These countries provide an interesting opportunity to improve our understanding of IIT. All CEECs are relatively industrialized and most have significant stocks of human capital. In conjunction with their geographic proximity to the EU and significantly lower real wages, there should have been significant scope for rapid growth in IIT after the collapse of central planning, driven by the opening of the economies and associated changes in managerial incentives, market structure and flows of technology.

IIT between the EU and the CEECs has been growing rapidly. As of 1995, three countries (Czech Republic, Hungary, and Slovenia) were among the top ten countries in terms of the share of IIT in total trade with the EU. We follow the recent literature in distinguishing between horizontal and vertical IIT. Loosely defined, the latter consists of exchange of similar goods of different quality; the former comprises exchange of similar goods that are differentiated by characteristics rather than quality. In the CEEC context the distinction is particularly relevant because the level and growth in *horizontal* IIT is a good indicator of the extent to which the CEECs are "similar" to the EU. This in turn is an important consideration in terms of "convergence" and the prospects for accession to the EU.

Our findings suggest that most IIT is vertical in nature: between 80 to 90 percent of total IIT with the EU is vertical. Horizontal IIT levels are less than half of those of countries such as Austria, Spain, or Switzerland and has been static over the 1990-95 period for the majority of countries. However, for the Czech Republic and Slovenia it has been growing rapidly and has attained levels that exceed those reported for countries such as Greece, Finland and Israel. After controlling for country-specific factors, vertical IIT is found to be positively associated with product differentiation, economies of scale, labor intensity of production, and foreign direct investment (FDI). A statistically significant positive association is also found between horizontal IIT and FDI, product differentiation and industry concentration, while a significant negative relationship is found for scale and the labor intensity of production. Only two of the coefficients (on FDI and scale economies)

are significant if country dummies are not included in the regression. Overall, industry-specific factors explain less than 15% of horizontal IIT. From this we conclude that country-specific effects dominate industry-specific determinants of horizontal IIT.

The empirical literature on IIT has generally found more support for the importance of country as opposed to industry factors. Given that vertical IIT accounts for most of the observed IIT between the EU and the sample of CEECs, one would have expected country factors to be particularly important determinants of vertical IIT. This is not the case: about 85% of the systemic variation in vertical IIT can be explained by industry-specific factors.

The estimation results are quite robust when compared to existing studies on the determinants of IIT and its components. It can be hypothesized that this is due to the specifics of the initial post-reform period in the CEECs which were associated with a very significant opening of the economy to international competition, high levels of FDI (in 1995 the FDI-to-GDP ratio in the Czech Republic and Hungary was 17% and 15%, respectively); and substantial increases in the incentives to pursue product differentiation strategies following demonopolization and the break-up of the old conglomerates. The high share of vertical IIT that is observed is not surprising given the differences in relative real wages for comparable skill levels that existed between the EU and the CEECs and the geographic proximity of the CEECs to the EU. It is precisely these characteristics that make the CEECs particularly interesting in terms of investigating the effects of different industry-specific variables on IIT.

I. Introduction

There is a large empirical literature that investigates the determinants of intra-industry trade (IIT). Most studies find strong support for country effects, but little evidence for the effects of the various industry-specific variables that theory suggests should be important (Greenaway, Hine and Milner, 1995). This is puzzling as most attempts to test theories that give rise to IIT focus on exchanges between highly developed economies. Trade between such countries should be driven less by differences in endowments or technologies than North-South trade. Given the relatively high degree of integration of high income countries, past diffusion of know how, cross-hauling of foreign direct investment (FDI), movement of people, and so forth, one would expect to see strong support for the theory as regards industry-specific determinants of IIT.

The existing literature focuses on trade flows that occur in the context of a relatively stable environment, with little change occurring in independent variables. There are no large shocks that affect managerial incentives, changes in market structure or the size of technology or capital flows. In this paper we analyze the determinants of IIT between the European Union (EU) and eight Central and Eastern European countries (CEECs) during the 1990-95 period. These countries provide a unique opportunity to improve our understanding of IIT. All CEECs are relatively industrialized and most have significant stocks of human capital. The scope for rapid growth in IIT after the collapse of central planning can be expected to have been substantial, driven by the opening of the economies and associated changes in managerial incentives, market structure and flows of technology. In conjunction with their geographic proximity and significantly lower

real wages, CEECs are a particularly appropriate set of countries for which to explore the effect of different industry-specific variables on IIT.

Previous research has found that IIT has indeed been growing rapidly in the region. Much of the IIT that is observed at relatively high levels of aggregation comprises a pattern of trade where CEECs import intermediate inputs which are used to produce goods for export that are classified in the same industry.[1] Studies that calculate IIT indices at more appropriate levels of disaggregation also find, however, that IIT has been rising rapidly.[2] As of 1995, most CEECs had levels of IIT comparable (or higher) to those of Portugal, Greece, and Israel. Three countries (Czech Republic, Hungary, and Slovenia) were among the top ten countries in terms of the share of IIT in total trade with the EU.

Existing studies of IIT between the EU and the CEECs do not distinguish between horizontal and vertical IIT. Loosely defined, the latter consists of exchange of similar goods of different quality and the former comprises exchange of similar goods that are differentiated by characteristics rather than quality. As argued by Abd-el-Rahman (1991) and Greenaway, Hine and Milner (1995) making such a distinction is important as the determinants of each type of IIT differs. In the CEEC context the distinction is particularly relevant because the level and growth in *horizontal* IIT is a good indicator of the extent to which the CEECs are "similar" to the EU. This in turn is an important

[1] Such trade reflects ongoing efforts by CEEC firms to upgrade production facilities and improve quality. See Hoekman and Djankov (1997) for an analysis of the importance of sourcing of inputs from the EU in changing the export structure of the CEECs.

[2] See, e.g., Neven (1994).

consideration in terms of "convergence" and the prospects for accession to the EU. More generally, given that the empirical literature has come to ambiguous conclusions regarding the determinants of horizontal IIT, additional evidence from a data source that has not yet been explored is informative. The dataset that exists for the CEECs is of high quality and includes industry-specific variables that are of interest.

Our findings suggest that vertical IIT accounts for 80 to 90 percent of total IIT with the EU, and that it is positively associated with product differentiation, economies of scale, labor intensity of production, and FDI. A statistically significant positive association is also found between horizontal IIT--the exchange of close substitutes of similar quality--and FDI, product differentiation and industry concentration, while a significant negative relationship is found for scale and the labor intensity of production. Only two of the coefficients (on FDI and scale economies) are significant if country dummies are not included in the regression. Overall, industry-specific factors explain less than 15% of horizontal IIT. From this we conclude that country-specific effects dominate industry-specific determinants of horizontal IIT. Conversely, about 85% of the systemic variation in vertical IIT can be explained by industry-specific factors.

The paper is structured as follows. Section II briefly summarizes the literature on IIT. Section III describes the dataset and discusses summary descriptive statistics. Section IV turns to an econometric analysis of the determinants of IIT, using the explanatory variables that are commonly used in the literature. Section V concludes.

II. Literature Review

Horizontal IIT arises when there is two-way trade in products of similar quality, but different characteristics or attributes. The theoretical basis for such trade was developed by Lancaster (1980), Krugman (1981), Helpman (1981, 1987) and Bergstrand (1990). These models suggest that the more similar countries are in terms of their endowments (incomes), the greater the share of horizontal IIT, which is driven by product differentiation and scale economies; the smaller the minimum efficient scale of production, the greater the number of firms in an industry, the greater the number of varieties supported by the market and the greater the magnitude of IIT.

Vertical IIT involves simultaneous export and import of similar goods of varying qualities. The theoretical basis for this type of IIT was first developed by Falvey (1981), who showed that vertical IIT may arise in situations where large numbers of firms produce varieties of different qualities but there are no increasing returns in production. The pattern of vertical IIT follows traditional endowment-based models, with the relatively capital abundant country exporting higher quality products and the relatively labor-abundant country exporting lower quality goods. Shaked and Sutton (1984) showed that vertical IIT may also arise in market structures with small numbers of firms and increasing returns. No clear predictions therefore arise regarding the impact of scale or concentration as a determinant of vertical IIT. However, as in the case of horizontal IIT, the greater the number of varieties supported by the market, the more vertical IIT is observed in equilibrium.

Although the general presumption in the literature is that multinational activity and IIT are positively correlated, the relationship between FDI and IIT is ambiguous. Vertical IIT is likely to be associated with the presence of inward FDI, as foreign firms can be expected to combine their technological knowledge with local endowments to produce goods of varying qualities that are then shipped to export markets. In the case of horizontally differentiated products, FDI may substitute for exports of the goods that were previously produced in the investor's home country (Markusen and Venables, 1996). Whether this would reduce IIT depends on the export structure of the industry in the foreign country prior to entry by the multinational. If the industry did not produce similar goods or if the foreign entrants have positive net exports, horizontal IIT may increase. Helpman and Krugman (1985) conclude that multinational activity will be positively correlated with horizontal IIT once country-specific effects are controlled for.

The empirical literature has focused on "testing" all or a subset of the industry-specific and country-specific determinants of IIT predicted by theory. These studies have generally found more empirical support for country-specific (i.e., endowments; income levels, distance) than industry-specific hypotheses (market structure, scale, product differentiation). Estimated coefficients on proxies for product differentiation and scale economies have often been insignificant or of the wrong sign, and the explanatory power of estimated equations is frequently very low. Greenaway, Hine and Milner (1994, 1995) argue that this may be the result of mis-specification, in particular the failure to distinguish horizontal from vertical IIT.[3]

[3] They conclude that the determinants of vertical and horizontal IIT differ, but not always in the expected manner. For the UK, vertical IIT appears to be better supported by models with large numbers of

Ethier (1982), Harrigan (1995) and Tybout (1993) all note that the appropriateness of regressing IIT indices on measures of scale or product differentiation is questionable, as the Grubel-Lloyd index is invariant to changes in these variables in the standard trade model with monopolistic competition. Moreover, Deardorff (1995) has demonstrated that reduced form equations where bilateral trade is regressed on income and distance can be consistent with a wide range of theoretical models, including neoclassical ones where there is no role for scale economies or imperfect competition. The implication of this is that regression analyses of the type commonly found in the literature cannot be regarded as tests of specific hypotheses or theories, and that no strong priors can be maintained as regards the signs of coefficient estimates that emerge from such exercises.

Notwithstanding these methodological criticisms, we follow the recent literature in focusing on the industry-specific determinants of vertical IIT and horizontal IIT, while controlling for country-specific factors. This approach is motivated in large part by our interest in investigating the role of IIT in the process of transition and exploring where the CEECs stand in relation to the EU and the EU's other trading partners. It also makes it easier to compare with the results of previous studies on IIT, based on North-North country data. The use of country dummies is motivated by the absence of reliable data on incomes (GDP) and endowments for the CEECs. More generally, it allows us to distinguish country from industry-specific effects. As noted by Hummels and Levinsohn

---

firms, but this is not the case for horizontal IIT. Scale economies were found to be significant only for horizontal IIT, while FDI was not a significant determinant of either type of IIT. In a more recent analysis of intra-EU IIT, Fontagné, Freudenberg and Péridy (1997) find that FDI and scale are positively associated with both horizontal and vertical IIT, while product differentiation is positive for vertical and negative for horizontal IIT.

(1995), the former include more than the incomes and distance variables commonly used in empirical work. Indeed, they conclude that country-pair dummies do more to explain bilateral IIT than differences in relative factor endowments. We use this insight by proxying for the multitude of country-pair factors that determine IIT with a fixed country-pair effect (one of the trading partners always being the EU).

III. Data and Measurement

Levels of IIT between eight CEECs and the EU(9)[4] is calculated for the 1990-95 period at the 6-digit level of disaggregation of the EU's Combined Nomenclature (equivalent to the Harmonized System). Data was obtained from COMEXT, Eurostat's trade database, using the EU as the reporter for both import and export flows. There are 5,019 six-digit product categories, which were concorded to the 3-digit NACE industry classification as provided in the EUROSTAT COMEXT software. The full sample covers 109 NACE industries[5] across the 8 CEECs, giving us a cross-section of 872 observations.

[4] Bulgaria, Czech Republic, Hungary, Moldova, Poland, Romania, Slovak Republic and Slovenia. In order to be able to compare CEEC data with those of other European countries we have excluded Austria, Finland, Greece, Portugal and Spain from the EU. The resulting EU (9) includes Belgium, Luxembourg, Germany, France, the United Kingdom, Italy, the Netherlands, Denmark, and Ireland. Belgium-Luxembourg is reported as one aggregate.

[5] The original sample consisted of 194 3-digit NACE industries. We exclude all agriculture-related and service sectors. Industries that correspond to the CN categories 460000 (wickerwork and basketwork), 910000 (clocks, watches and parts thereof), 920000 (musical instruments, parts and accessories), 930000 (arms and ammunition), 960000 (miscellaneous manufactured articles), 970000 (works of art, antiques), 980000 (power production) and 990000 (other products) are excluded from the sample due to data limitations and reporting problems.

We use the adjusted Grubel-Lloyd (1975) index:

$$(1) \qquad IIT_{jk} = \left\{1 - \left[\frac{\sum_i |x_{ijk} - m_{ijk}|}{\sum_i (x_{ijk} + m_{ijk})}\right]\right\} x100$$

where *i* refers to the 6-digit product categories that make up each 3-digit "industry" *j* and k identifies countries. The index of IIT varies between 0 (complete inter-industry trade) and 100 (complete intra-industry trade). Following Greenaway, Hine and Milner (1995), horizontal IIT is defined to exist for trade in product *i* in industry *j* that satisfies the criterion:

$$1 - \alpha \leq \frac{\text{exportUV}_{ijk}}{\text{importUV}_{ijk}} \leq 1 + \alpha$$

Vertical IIT comprises trade where:

$$\frac{\text{exportUV}_{ijk}}{\text{importUV}_{ijk}} < 1 - \alpha \quad \text{or} \quad \frac{\text{exportUV}_{ijk}}{\text{importUV}_{ijk}} > 1 + \alpha$$

Relative unit values of exports and imports are utilized to disentangle horizontal from vertical IIT. The underlying assumption is that relative prices tend to reflect differences in qualities. Thus, vertical IIT is defined as two-way trade in a 6-digit product whose per kilogram unit value of exports (measured f.o.b.) relative to its per kilogram unit value of imports (measured c.i.f.) falls outside a specified range of $\pm\alpha$ Trade in products whose relative unit values fall within the range $\pm\alpha$ is defined as horizontal IIT. Once IIT has been separated into the two types at the 6-digit level, trade flows are aggregated over the 6-digit categories to compute vertical and horizontal IIT at the 3-digit industry level. As

in Abd-el-Rahman (1991) and Greenaway, Hine and Milner (1995), we use a unit value dispersion of 15 percent (i.e., α=0.15) for the analysis, as well as α=0.25 as a robustness check.

Descriptive statistics on unit values for the eight CEECs during 1993-1995 are reported in Table 1A. They illustrate that the significant variance in unit values across countries. The values for the Czech Republic, Hungary, Poland and Slovenia are somewhat lower than what is observed for comparator countries such as Greece, Portugal or Spain, but the difference is not very large. Tables 2A-4A report summary statistics for total IIT, horizontal IIT and vertical IIT (α=±15%) between the 8 CEECs and the EU(9) as well as between 31 comparator countries and the EU(9) for the years 1990-1995. In addition, Tables 5A and 6A present data at the α=±25% level for the eight CEECs. The numbers reported are not absolute levels of IIT but shares in gross industry trade, i.e.

$$\mathrm{IIT(z)}_{jk} = \left\{ \frac{\sum_i \left(x^z_{ijk} + m^z_{ijk}\right)}{\sum_i \left(x_{ijk} + m_{ijk}\right)} \left(1 - \left[\frac{\left(\sum_i \left| x^z_{ijk} - m^z_{ijk} \right| \right)}{\sum_i \left(x^z_{ijk} + m^z_{ijk}\right)} \right] \right) \right\} x100,$$

where i refers to the 6-digit CN products in each 3-digit industry, j is a subscript for the 3-digit industry, and z varies over horizontal and vertical IIT.

All the CEECs display relatively high levels of IIT. The Czech Republic has the highest share of IIT in the sample (42.5%), the fifth largest of any EU trading partner for 1995. Hungary and Slovenia are also among the "top ten" countries in terms of the share of IIT in total trade with the EU. In general, average IIT indices for the 8 CEECs are similar and show little variation over the reported period. The exceptions are the Czech

Republic, which has an above average mean level of IIT of approximately 43% during 1993-1995, and Moldova, where the mean IIT varies significantly from year to year.[6] The extent to which vertical IIT dominates horizontal IIT for all eight CEECs is striking. Vertical IIT accounts for 80 to 90 percent of total IIT. The horizontal IIT levels are similar to those observed for Finland, Greece, Israel, Portugal and Tunisia, and are less than half the level of countries such as Austria, Spain, or Switzerland. Noteworthy is also that horizontal IIT has been static over the 1990-95 period for most countries, the only exceptions being the Czech Republic and Slovenia. Similar conclusions obtain if α is set at 25%.

Industry specific variables are calculated using firm-level data from a comprehensive enterprise dataset on CEECs. A detailed description of the dataset can be found in Pohl et al. (1997). The data contain balance sheets and profit and loss statements for 1992-95 for the eight CEECs in our sample, obtained from private firms (Czech Republic and Hungary) or central statistical offices (Bulgaria, Moldova, Poland, Romania, Slovak Republic, and Slovenia). Typically, the data are annual observations at the plant level and cover the majority of plants in manufacturing industries. Two types of selection bias are present: "informal" enterprises are excluded and small firms are under-represented. The sample primarily covers medium and large enterprises in the formal sector.

[6] We also used the 4-digit CN disaggregation to calculate IIT, HIIT, and VIIT (not reported). The results proved to insensitive to the initial level of disaggregation - the IIT shares derived from the 6- and 4-digit levels are similar. The only measurable difference is that the numbers for Moldova do not display significant variation anymore.

In an attempt to use similar data across all eight countries, we have restricted the samples to firms that have more than twenty-five workers. The exclusion of small firms undoubtedly presents a possible problem in terms of capturing the true extent of, say, FDI flows to the eight CEECs. Since foreign investors are, however, likely to be attracted by firms with significant market power, the results are probably not affected significantly.[7] We exclude all firms which have missing observations in 1995. The majority of the excluded firms reported in 1992-94, which suggests that they may not be liquidated, but simply failed to report. This could give rise to a selection bias if smaller firms (or firms without FDI, etc.) are more likely to exit (or not turn in their reports), leading to an overestimate of all our variables, but particularly the industry concentration variable. This will, however, be the case for all countries -- *a priori* we cannot sign the selection bias that results from this data cleaning.

The data include detailed information on firm revenues and expenditures, as well as its ownership status and equity stakes of strategic investors. A firm is regarded as "foreign" when more than a third of its shares are foreign-owned. This choice was made based on the existing corporate laws in the Central and Eastern European countries. In all eight countries, major strategic and investment decisions at the firms' Board of Directors can be taken with only two-thirds majority. Thus if more than one-third of shares are owned by foreign nationals they can block decisions of the Board.

[7] In four countries (Bulgaria, Romania, Slovak Republic, Slovenia) we have the complete industrial census, including firms with less than twenty-five workers. We construct the four explanatory variables using the whole population of firms, and then the truncated sample with firms which employ more than twenty-five workers. Since the resulting variables (not reported) do not differ significantly, we proceed with truncated samples in all eight countries.

IV. Estimation

Consistent with the literature on the determinants of IIT, we estimate a regression model of the following form:

$$IIT_{jk}(z) = \beta_0 + \beta_1 LAB_{jk} + \beta_2 CONC_{jk} + \beta_3 FDI_{jk} + \beta_4 MES_{jk} + \beta_5 PD_{jk} + \beta_6 BGR + \beta_7 CZE + \beta_8 HUN + \beta_9 MDA + \beta_{10} ROM + \beta_{11} SVK + \beta_{12} SVN + \varepsilon_{jk}$$

where

IIT(z=total):	3-digit industry j IIT between country k and the EU(9)
IIT(z=H):	3-digit industry j HIIT (±15%) between country k and the EU(9).
IIT(z=V):	3-digit industry j VIIT (±15%) between country k and the EU(9).
LAB:	The inverse of the share of energy in total costs
CONC:	Four firm sales concentration ratio
FDI:	FDI output as a share of industry total
MES:	Minimum efficient scale: ratio of output of top 4 firms to rest of industry
PD:	Number of 8-digit categories in a 3-digit industry
BGR:	Bulgaria country dummy
CZE:	Czech Republic country dummy
HUN:	Hungary country dummy
MDA:	Moldova country dummy
ROM:	Romania country dummy
SVK:	Slovak Republic country dummy
SVN:	Slovenia country dummy

The four firm sales concentration ratio (CONC) is a proxy for the influence of market structure on IIT. Existing theory suggests markets with a large number of firms are more likely to generate horizontal IIT than markets with a small number of firms.[8] Therefore,

[8] For example, Lancaster (1980) demonstrates that a market structure of perfect monopolistic competition will necessarily lead to a high degree of horizontal IIT. Models have been developed where horizontal IIT occurs in a small numbers setting, but large number models "form the dominant paradigm" (Greenaway, Hine and Milner, 1995, p. 1507).

the expected sign on β_2 is negative for horizontal IIT. Theory is more ambivalent regarding the effect of market structure on vertical IIT. Thus, β_2 may be greater or less than zero depending on whether a small or a large number model applies. The minimum efficient scale of production (MES) is measured as the ratio of gross value-added per employee in the largest four firms to gross value-added per employee in the remaining firms. The expected sign for this variable on horizontal IIT is negative, as low scale economies will lead to easier entry, a greater number of monopolistically competitive firms and thus more varieties and increased IIT. The predicted effect of scale on vertical IIT depends on market structure and may therefore be positive or negative. The product differentiation variable (PD) is defined as the number of 8-digit CN product categories in each 3-digit NACE sector.[9] The expected signs are $\beta_5>0$ for horizontal IIT since this type of IIT is directly related to the existence of differentiated products. Conversely, we expect $\beta_5<0$ for vertical IIT.

In addition to the foregoing variables, we also investigate the relevance of foreign direct investment (FDI) and labor intensity (LAB) for IIT. FDI is generally hypothesized to be positively associated with the level of IIT, as multinationals are often multi-product firms. One result of FDI is greater specialization in production by plants located in different countries, giving rise to more IIT, both horizontal and vertical. We therefore expect the sign on FDI (β_3) to be positive for both types of IIT. Given the absence of reliable data on labor utilization in the CEEC context, the inverse of the share of energy in total costs is used as an indicator of labor intensity. The higher the energy intensity of

[9] There are a total of 11,257 8-digit categories in the EUROSTAT database.

an activity, the lower will be the share of labor in total value added. This suggests that there will be less scope for vertical IIT, as variations in quality will generally be associated with activities that allow variations in inputs of skilled and unskilled labor. More specifically, in the CEEC context industries with high energy use (fertilizers, basic metals, plastics/rubber) were confronted with large increases in input costs as energy subsidies were eliminated. Some also became subject to greater pricing scrutiny in export markets (through antidumping and related policies). Such factors implied greater pressures to (a) "price to market" and (b) differentiate output to compete with foreign producers. This in turn could be reflected in an observed rise in horizontal IIT. We therefore expect the sign on β_1 to be negative for vertical and positive for horizontal IIT. Descriptive statistics for all five independent variables are reported in Table 1.

Table 1: Descriptive Statistics of the Explanatory Variables, 1995 (3-digit NACE)

CONC	Bulgaria	Czech	Hungary	Moldova	Poland	Romania	Slovakia	Slovenia
Mean	0.443	0.346	0.354	0.553	0.287	0.312	0.366	0.441
Median	0.396	0.252	0.325	0.458	0.272	0.296	0.287	0.362
St. Dev	0.287	0.224	0.245	0.264	0.174	0.189	0.229	0.234
LAB								
Mean	8.623	9.615	9.258	7.756	8.843	7.813	9.005	9.345
Median	10.981	11.364	9.806	8.064	8.621	8.064	9.176	9.432
Std. Dev	16.358	25.643	24.392	20.833	29.415	22.241	24.395	31.254
FDI								
Mean	0.032	0.174	0.198	0.021	0.089	0.042	0.052	0.096
Median	0.000	0.113	0.143	0.000	0.010	0.000	0.000	0.035
Std. Dev	0.058	0.207	0.224	0.126	0.149	0.096	0.112	0.146
MES								
Mean	1.023	1.042	1.028	0.997	1.016	0.967	1.047	1.073
Median	1.002	1.016	1.012	0.978	0.987	0.961	1.026	1.031
Std. Dev	0.317	0.172	0.178	0.315	0.254	0.274	0.172	0.198
PD								
Mean	117.968	117.968	117.968	117.968	117.968	117.968	117.968	117.968
Median	63.000	63.000	63.000	63.000	63.000	63.000	63.000	63.000
Std. Dev.	162.591	162.591	162.591	162.591	162.591	162.591	162.591	162.591

Leamer (1994) has argued that it is important to look at the simple correlation matrix between dependent and independent variables as it can be quite difficult to interpret the partial correlations that emerge from the regression analysis. Table 2 reports the simple correlations between all variables used in the analysis. There is a relatively strong negative relationship between labor intensity and IIT, and a strong positive correlation between FDI and IIT. Correlations between the explanatory variables and horizontal IIT are quite low, although it can be noted that the highest (negative) correlations are with MES and CONC. Correlations with vertical IIT are very similar to those with total IIT: there is a high positive correlation with FDI, a substantial positive correlation with LAB, and no correlation with CONC and MES. FDI is positively associated with LAB, suggesting that FDI has been going into relatively labor-intensive sectors. This is consistent with the high correlation between FDI and vertical IIT, as the latter will involve activities where there is scope for quality differentiation through employment of more labor intensive techniques that build on lower labor costs in the CEECs. Note also that the correlation between CONC and MES is not very high.

Table 2: Correlation Matrix, 1995.

	IIT	HIIT(15%)	VIIT(15%)	LAB	CONC	FDI	MES	PD
IIT	1.000							
HIIT(15%)	0.416	1.000						
VIIT(15%)	0.895	-0.038	1.000					
LAB	0.358	0.072	0.351	1.000				
CONC	-0.089	-0.152	-0.033	-0.178	1.000			
FDI	0.618	0.091	0.637	0.245	0.072	1.000		
MES	-0.027	-0.128	0.021	-0.154	0.145	-0.001	1.000	
PD	0.156	0.038	0.152	-0.016	0.206	0.051	0.001	1.000

As mentioned previously, country dummies are used to capture the country-specific determinants of VIIT and HIIT which are generally assumed to include factors such as incomes, distance, and differences in endowments. As our primary interest is to explore the significance of industry-specific variables as determinants of IIT, the use of country dummies is an effective way of controlling for country-specific effects. Given the widespread presence of zero observations on trade flows at the 6-digit level, we follow Balassa and Bauwens (1987) in using nonlinear least squares to estimate the following logistic function:

$$IIT(z)_{ijk} = \frac{1}{1+\exp\left(-b' x_{ijk}\right)} + \varepsilon_{ijk}$$

where b' is the regression coefficients vector, x the explanatory variables vector and ε is the random disturbance term. In order to correct for possible heteroscedasticity in the disturbances, all regressions were estimated with heteroscedastic consistent standard errors.

V. Regression Results

The results of the estimation for IIT, VIIT and HIIT at the $\alpha=\pm 15\%$ with (1) and without (2) country dummies are reported in Table 3. For total IIT, labor intensity, FDI and the product differentiation proxy are statistically significant, the first two variables having by far the largest coefficient estimates. The adjusted R^2 is 0.599, which is quite high for cross-section regressions of this type. Most of the country dummies are not significant. If the regression is run without the dummies, the goodness of fit does not decline very

much, and the concentration and scale variables become significant. This suggests country-specific variables are not very important determinants of IIT. The relative unimportance of the country dummies is somewhat surprising in light of the literature, which concludes that these are generally more robust explanatory factors than industry variables.

The fit of the estimation for horizontal IIT is less good than that for IIT as a whole: the adjusted R^2 falls to 0.372. Compared to earlier work this is nonetheless relatively high.[10] The sign of the coefficient estimate on LAB is negative as expected. The MES coefficient also has the expected negative sign and is significant, while the coefficients on FDI, CONC and PD are positive and again significant. Without the country dummies the explanatory power of the equation drops to 0.059, and only FDI and MES remain significant. It therefore appears that horizontal IIT is driven primarily by country-specific effects. If account is taken of the wide differences in distances from the eight CEECs in the sample to the EU, as well as in per capita incomes--Moldova, the poorest country has an estimated per capita income level that is one-tenth that of Slovenia, the richest country--this result is not that surprising.

The VIIT results are much closer to those obtained for total IIT (R^2 of 0.556), reflecting the fact that VIIT accounts for 80 to 90 percent of total IIT (see the Appendix Tables). FDI has the predicted positive sign and is highly significant. The product differentiation and scale variables are also positive and significant but the concentration

[10] Greenaway, Hine and Milner (1995) obtain an R^2 of only 0.06, while Greenaway, Milner and Elliot (1996) obtain an R^2 of 0.12 in a regression that adds country-specific explanatory variables such as income levels and distance. Fontagné et al. (1997) obtain an adjusted R^2 of 0.46 in a panel setting for intra-EU IIT that includes country, industry, and policy variables.

variable is not significant. As is the case for total IIT, the fit of the equation is not very sensitive to the inclusion of country dummies.

Table 3: Nonlinear Least Squares Estimation Results
(109 3-digit NACE sectors at $\alpha=\pm 15\%$)

Independent Variables	IIT(1)	IIT(2)	HIIT(1)	HIIT(2)	VIIT(1)	VIIT(2)
Constant	-0.099	-0.207	2.055	-2.863	-0.318	-0.445
	(-0.461)	(-1.185)	(1.711)	(-5.335)	(-1.787)	(-2.008)
LAB	0.118	0.053	-0.233	-0.138	0.125	0.083
	(9.536)	(5.362)	(-2.638)	(-1.322)	(8.372)	(3.187)
CONC	-0.023	-0.284	4.169	-0.137	-0.055	-0.218
	(-0.157)	(-2.234)	(8.241)	(-0.394)	(-0.435)	(-1.536)
FDI	3.132	3.314	1.269	2.069	2.633	2.805
	(13.852)	(17.536)	(4.761)	(7.316)	(15.253)	(10.078)
MES	0.171	0.371	-10.079	-1.141	0.469	0.643
	(1.233)	(3.054)	(-7.769)	(-2.659)	(4.108)	(4.548)
PD	0.001	0.001	0.002	0.004	0.001	0.001
	(8.432)	(8.393)	(4.663)	(1.458)	(7.559)	(7.578)
BGR	-0.112	--	-3.578	--	-0.052	--
	(-1.387)		(-3.834)		(-0.566)	
CZE	0.354	--	2.504	--	0.268	--
	(5.206)		(3.254)		(3.305)	
HUN	-0.213	--	0.271	--	-0.186	--
	(-2.774)		(0.586)		(-2.161)	
MDA	-0.931	--	-3.374	--	-0.806	--
	(-6.263)		(-5.486)		(-6.641)	
ROM	0.062	--	-4.032	--	-0.006	--
	(0.742)		(5.024)		(-0.062)	
SVK	0.182	--	0.793	--	0.106	--
	(2.361)		(1.587)		(1.255)	
SVN	0.145	--	1.716	--	-0.145	--
	(1.795)		(3.735)		(-1.654)	
Number of obs:	872	872	872	872	872	872
Adjusted R^2	0.599	0.501	0.373	0.059	0.556	0.489

Notes: t-statistics are in parentheses. CONC and MES may be highly correlated resulting in multicollinearity problems in the estimation. However, examination of the correlation matrix gave no indication of strong collinearity between the two variables.

To test the robustness of our results to the definition of horizontal and vertical IIT, we re-run the regressions using the data for HIIT and VIIT using $\alpha=\pm 25\%$ as the criterion (Table 4). No significant differences with the results reported in Table 3 emerge if country dummies are included.

Table 4: Nonlinear Least Squares Estimation Results
(109 3-digit NACE sectors at $\alpha=\pm 25\%$)

Independent Variables	HIIT(1)	HIIT(2)	VIIT(1)	VIIT(2)
Constant	-0.314	-1.448	-0.894	-0.856
	(0.789)	(-3.857)	(-4.759)	(-3.547)
LAB	-0.064	-0.082	0.106	0.064
	(-1.875)	(-3.182)	(6.528)	(3.498)
CONC	0.614	-0.682	0.133	-0.046
	(1.945)	(-2.347)	(1.008)	(-0.297)
FDI	2.534	2.224	2.168	2.297
	(10.428)	(9.487)	(12.984)	(9.1458)
MES	-1.592	-0.824	0.659	0.831
	(-4.767)	(-2.774)	(5.513)	(5.402)
PD	0.001	0.001	0.001	0.001
	(4.164)	(2.627)	(7.738)	(7.563)
BGR	-1.687	--	0.169	--
	(-3.245)		(1.748)	
CZE	0.514	--	0.458	--
	(3.104)		(5.287)	
HUN	1.185	--	0.014	--
	(6.304)		(0.164)	
MDA	-1.128	--	-0.662	--
	(-3.498)		(-5.014)	
ROM	-0.194	--	0.081	--
	(1.144)		(0.834)	
SVK	-0.384	--	0.327	--
	(-2.067)		(3.628)	
SVN	0.542	--	-0.143	--
	(4.325)		(-1.465)	
Number of obs:	872	872	872	872
Adjusted R^2	0.274	0.115	0.504	0.424

Note: t-statistics are in parentheses.

If country-dummies are excluded, however, the CONC and PD coefficients in the HIIT specification become significant and the overall fit of the regression increases to 0.115. Overall, the results are not very sensitive to the choice of α.

VI. Concluding Remarks

The magnitude of IIT is relatively high in bilateral trade between the CEECs and the EU. Levels of total IIT are comparable to those observed for countries such as Canada, Israel, Korea or Portugal. Most of the IIT is vertical in nature. Horizontal IIT levels are less than half of those of countries such as Austria, Spain, or Switzerland. Horizontal IIT has also been static over the 1990-95 period for the majority of countries. However, for some countries such as the Czech Republic and Slovenia it has been growing rapidly and has attained levels that exceed those reported for countries such as Greece, Finland and Israel.

After controlling for country-specific factors, we find a positive and significant relationship between FDI and product differentiation and both vertical and horizontal IIT. Scale is negatively (positively) associated with horizontal (vertical) IIT, while concentration is positive and significant for horizontal IIT, but is insignificant for vertical IIT. Horizontal IIT is highly dependent on conditioning on country specific variables. If country dummies are not included in the estimation. the explanatory power of the industry-specific variables declines substantially. The empirical literature on IIT has generally found more support for the importance of country as opposed to industry factors (Balassa and Bauwens, 1987; Greenaway et al. 1995). Given that vertical IIT accounts for most of the observed IIT between the EU and the sample of CEECs, one

would have expected country factors to be particularly important determinants of vertical IIT. This is not the case for vertical IIT between the EU and the CEECs.

The estimation results are quite robust when compared to existing studies on the determinants of IIT and its components. It can be hypothesized that this is due to the specifics of the initial post-reform period in the CEECs which were associated with a very significant opening of the economy to international competition, high levels of FDI (in 1995 the FDI-to-GDP ratio in the Czech Republic and Hungary was 17% and 15%, respectively); and substantial increases in the incentives to pursue product differentiation strategies following demonopolization and the break-up of the old conglomerates. The high share of vertical IIT that is observed is not surprising given the differences in relative real wages for comparable skill levels that existed between the EU and the CEECs and the geographic proximity of the CEECs to the EU. It is precisely these characteristics that make the CEECs particularly interesting in terms of investigating the effects of different industry-specific variables on IIT.

References

Abd-el-Rahman, Kamal, (1991) "Firms' Competitive and National Comparative Advantage as Joint Determinants of Trade Composition," *Weltwirtschaftliches Archiv*, 127:83-97.

Balassa, Bela and Luc Bauwens, (1987) "Intra-Industry Specialization in a Multi-Country and Multi-Industry Framework," *Economic Journal*, 97:923-939.

Bergstrand, Jeffrey H., (1990) "The Hecksher-Ohlin-Samuelson Model, the Linder Hypothesis and the Determinants of Bilateral Intra-Industry Trade," *Economic Journal*, 100:1216-1229.

Deardorff, Alan. 1995. "Determinants of Bilateral Trade: Does Gravity Work in a Neoclassical World? NBER Working Paper 5377.

Ethier, W. 1982. "National and International Returns to Scale in the Modern Theory of International Trade," *American Economic Review*, 72:389-405.

Falvey, Rodney E., (1981) "Commercial Policy and Intra-Industry Trade," *Journal of International Economics*, 11:495-511.

Falvey, Rodney E. and Henryk Kierzkowski, (1985) "Product Quality, Intra-Industry Trade and (Im)perfect Competition," in edited by H. Kierzkowski *Protection and Competition in International Trade*, Blackwell: Oxford.

Fontagné, Lionel, Michael Freudenberg and Nicolas Péridy. 1997. "Trade Patterns Inside the Single Market," Discussion Paper 97-07, CEPII, Paris.

Greenaway, David, Chris Milner and Robert Elliott, (1996) "UK Intra-Industry Trade with EU North and South: A Multi-Country and Multi-Industry Analysis," Centre for Research in Economic Development and International Trade, University of Nottingham, Paper No. 96/9, May.

Greenaway, David, Robert Hine and Chris Milner, (1995) "Vertical and Horizontal Intra-Industry Trade: A Cross Industry Analysis for the United Kingdom," *Economic Journal*, 105:1505-1518, November.

_____(1994) "Country-Specific Factors and the Pattern of Horizontal and Vertical Intra-Industry Trade in the UK," *Weltwirtschaftliches Archiv*, 130:77-100.

Grubel, Herbert G., and P. J. Lloyd, (1975) *Intra-Industry Trade: The Theory and Measurement of International Trade in Differentiated Products*, London.

Harrigan, J. 1995. "The Volume of Trade in Differentiated Intermediate Goods: Theory and Evidence," *Review of Economics and Statistics*, 77:283-93.

Helpman, Elhanan, (1981) International Trade in the Presence of Product Differentiation, Economies of Scale and Monopolistic Competition: A Chamberlin-Hecksher-Ohlin Approach," *Journal of International Economics*, 11:305-340.

_____(1987) "Imperfect Competition and International Trade: Evidence from Fourteen Industrial Countries," *Journal of the Japanese and International Economies*, 1:62-81.

Helpman, E. and P. Krugman. 1985. *Market Structure and International Trade.* Cambridge: MIT Press.

Hoekman, Bernard and Simeon Djankov. 1997. "Determinants of the Export Structure of East European Countries," *World Bank Economic Review*, September

Hummels, David and James Levinsohn, (1995) "Monopolistic Competition and International Trade: Reconsidering the Evidence," *Quarterly Journal of Economics*, 110:799-836.

Krugman, Paul, (1981) "Intra-Industry Specialization and the Gains from Trade," *Journal of Political Economy*, 89:959-973.

Lancaster, K., (1980) "Intra-Industry Trade Under Perfect Monopolistic Competition," *Journal of International Economics*, 10:151-175.

Leamer, E. 1994. "Testing Trade Theories," in D. Greenaway and L. Alan Winters (ed.), *Surveys in International Trade*. Oxford: Blackwell.

Markusen, James R., and Anthony J. Venables, (1996) "The Theory of Endowment, Intra-Industry and Multinational Trade," Centre for Economic Policy Research, London, Discussion Paper No. 1341, February.

Neven, Damien. 1995. "Trade Liberalization with Eastern Nations: Why So Sensitive?," in R. Faini and R. Portes (eds.), *European Union Trade with Eastern Europe*. London: CEPR.

Shaked, A and J. Sutton, (1984) "Natural Oligopolies and International Trade," in edited by H. Kierzkowski, *Monopolistic Competition and International Trade*, Oxford University Press: Oxford.

Tybout, Jim. 1993. "Internal Returns to Scale as a Source of Comparative Advantage: The Evidence," *American Economic Review*, Papers and Proceedings, 83:440-44.

Table 1A: Average ratio of export to import unit values, 1993-95
(109 3-digit NACE sectors)

1993	Bulgaria	Czech	Hungary	Moldova	Poland	Romania	Slovakia	Slovenia
Mean	0.711	1.119	1.052	0.826	1.008	1.034	0.896	1.153
Median	0.659	0.795	0.836	0.658	0.742	0.742	0.736	0.956
Std.dev	0.425	1.199	0.716	0.732	0.937	1.012	0.613	1.041
1994								
Mean	0.766	1.058	1.074	0.754	0.972	0.950	0.911	1.182
Median	0.648	0.784	0.826	0.587	0.786	0.687	0.705	0.923
Std.dev	0.443	0.915	0.749	0.674	0.626	0.903	0.883	1.231
1995								
Mean	0.908	1.002	1.265	0.644	1.126	0.837	0.869	1.221
Median	0.694	0.834	0.962	0.508	0.885	0.660	0.714	1.046
Std.dev	0.721	0.611	1.221	0.520	1.125	0.594	0.585	1.272
1993	Albania	Estonia	Greece	Latvia	Lithuania	Portugal	Spain	Austria
Mean	1.148	0.806	1.361	0.633	0.851	1.444	1.235	1.432
Median	0.865	0.442	0.948	0.483	0.472	1.140	1.034	1.315
Std.dev	0.884	1.170	1.874	0.591	0.985	0.982	1.874	0.711
1994								
Mean	1.308	0.653	1.128	0.570	0.871	2.138	1.175	1.442
Median	1.000	0.447	0.935	0.530	0.524	1.092	0.996	1.337
Std.dev	1.673	0.466	1.261	0.313	1.005	6.991	0.826	0.734
1995								
Mean	1.614	0.925	1.284	1.033	1.040	1.922	1.416	1.517
Median	1.016	0.512	0.927	0.685	0.615	1.097	0.935	1.351
Std.dev	2.642	0.482	1.174	1.467	1.637	3.244	2.040	0.788

Note: Since unit values may not be dependable for minimal amounts of trade flows, unit values were calculated for only those flows which exceeded 5,000 ECU.

Table 2A: Total Intra-Industry Trade with EU(9)
(109 3-digit NACE sectors)

COUNTRY		1990	1991	1992	1993	1994	1995
CEEC:							
Albania	Mean	48.47	33.86	35.82	41.22	38.31	34.49
	Median	58.06	30.51	25.11	34.94	35.42	28.97
	Std. Dev	30.66	27.15	31.19	31.04	30.49	29.89
Bulgaria	Mean	27.95	30.87	28.81	33.32	31.04	24.57
	Median	24.46	23.64	23.13	29.91	27.37	18.80
	Std. Dev	21.08	20.22	19.33	24.16	24.19	18.57
Czechoslovakia	Mean	31.56	36.82	41.04	--	--	--
	Median	31.13	36.30	44.14	--	--	--
	Std. Dev	20.56	22.34	21.95	--	--	--
Czech Republic	Mean	--	--	--	43.87	43.43	43.68
	Median	--	--	--	42.38	41.89	42.52
	Std. Dev	--	--	--	22.32	23.03	22.41
Slovak Republic	Mean	--	--	--	34.98	33.46	29.41
	Median	--	--	--	30.28	31.01	21.53
	Std. Dev	--	--	--	23.50	23.46	22.66
Hungary	Mean	36.43	35.84	34.43	34.65	35.53	33.09
	Median	34.39	33.70	33.96	32.20	35.38	32.53
	Std. Dev	22.53	20.03	19.25	20.57	19.20	19.01
Poland	Mean	29.12	28.87	28.03	28.98	29.01	29.69
	Median	25.74	20.48	24.23	22.20	22.54	21.62
	Std. Dev	19.99	20.87	18.32	22.29	22.42	22.12
Romania	Mean	25.88	27.55	27.19	28.47	27.22	25.74
	Median	18.26	21.86	24.17	22.68	20.49	17.96
	Std. Dev	24.40	22.53	19.85	22.51	22.42	22.96
Slovenia	Mean	--	--	37.52	33.66	36.87	37.35
	Median	--	--	36.20	32.75	37.82	37.15
	Std. Dev	--	--	19.54	20.48	21.02	23.04
EU/EFTA:							
Austria	Mean	50.37	50.23	50.56	50.45	51.04	47.03
	Median	51.36	52.78	51.77	51.97	53.92	50.29
	Std. Dev	20.09	19.58	20.61	21.20	20.05	20.49
Finland	Mean	33.08	34.89	35.86	35.34	34.64	31.72
	Median	28.64	32.45	32.24	33.10	32.83	33.60
	Std. Dev	22.57	22.36	22.91	20.80	20.93	17.89
Greece	Mean	25.69	25.78	24.02	20.59	22.99	22.50
	Median	20.21	20.60	19.10	15.34	19.05	15.51
	Std. Dev	21.60	19.16	19.66	17.02	18.09	18.75
Portugal	Mean	30.28	32.39	31.49	30.12	30.15	30.46
	Median	22.04	26.49	25.23	27.02	25.05	25.52
	Std. Dev	23.20	24.76	23.09	20.75	23.46	22.19
Spain	Mean	50.48	47.92	47.70	48.93	50.53	51.29
	Median	49.24	48.31	46.94	49.03	52.73	53.52
	Std. Dev	20.24	18.64	19.65	18.07	19.47	21.56
Switzerland	Mean	51.33	51.98	52.88	53.22	52.68	52.31
	Median	52.49	52.70	53.57	55.11	52.31	53.81
	Std. Dev	20.94	20.06	19.14	18.61	18.99	19.31
MENA:		1990	1991	1992	1993	1994	1995
Egypt	Mean	21.11	20.09	19.36	22.71	22.05	24.50
	Median	13.83	13.78	15.56	13.73	12.51	15.17
	Std. Dev	18.97	18.44	16.81	22.32	24.69	25.68
Israel	Mean	34.07	30.28	33.61	31.56	29.68	33.14
	Median	29.73	24.95	26.30	27.30	24.68	28.15
	Std. Dev	24.52	22.90	23.82	23.30	20.57	22.68
Morocco	Mean	21.17	19.86	17.30	18.38	18.85	18.71
	Median	11.60	9.73	10.53	10.34	8.86	11.13
	Std. Dev	23.49	22.00	18.92	20.01	20.83	20.39
Tunisia	Mean	28.29	26.88	28.85	25.91	21.13	24.86
	Median	19.63	18.27	20.12	15.62	16.56	16.21
	Std. Dev	24.36	23.26	25.20	23.39	17.80	22.36
Turkey	Mean	28.75	26.61	26.39	25.20	28.20	29.05
	Median	21.42	21.51	20.85	18.73	25.40	21.15
	Std. Dev	24.77	23.14	20.19	22.59	19.88	24.26

NICs:							
Indonesia	Mean	19.55	15.75	17.80	17.43	22.78	17.96
	Median	11.87	8.73	12.02	8.89	14.81	8.75
	Std. Dev	20.20	15.79	17.60	20.01	23.43	19.07
Korea	Mean	26.35	23.35	25.74	26.31	28.38	30.85
	Median	25.96	22.47	21.46	21.18	27.07	29.86
	Std. Dev	19.01	13.70	17.87	19.19	18.50	19.38
Malaysia	Mean	25.27	27.21	26.94	28.17	27.41	26.89
	Median	18.19	16.29	19.33	19.62	23.22	23.38
	Std. Dev	22.75	25.72	22.66	24.62	23.31	23.04
Taiwan	Mean	25.86	23.17	24.64	25.86	27.10	29.80
	Median	22.20	21.89	19.76	19.83	25.08	27.38
	Std. Dev	21.97	19.72	19.03	21.84	20.44	21.23
South America:							
Argentina	Mean	28.90	26.41	24.26	23.68	20.88	21.14
	Median	23.62	24.58	21.14	14.90	12.68	13.75
	Std.dev	21.67	18.45	19.34	24.80	19.70	20.20
Brazil	Mean	31.75	28.77	26.90	27.98	31.15	22.79
	Median	29.89	23.83	23.34	22.78	26.29	20.80
	Std.dev	24.46	23.36	20.91	21.29	22.92	16.41
Chile	Mean	26.00	32.39	26.92	23.19	26.11	20.45
	Median	15.27	16.89	12.97	11.40	10.87	9.83
	Std.dev	27.62	30.71	28.18	24.41	26.97	25.09
South Asia:							
Bangladesh	Mean	34.73	17.74	32.53	21.57	24.84	23.96
	Median	29.09	7.82	19.47	17.11	17.89	20.45
	Std. Dev	29.86	22.71	31.02	24.25	24.60	22.55
India	Mean	27.09	24.44	25.69	27.13	24.06	29.09
	Median	22.02	17.92	21.45	24.27	21.33	21.45
	Std. Dev	23.61	20.81	20.66	23.58	18.78	23.59
Pakistan	Mean	21.71	18.75	17.26	19.53	23.17	20.08
	Median	11.62	10.08	8.09	7.88	12.34	8.40
	Std. Dev	22.33	19.91	19.83	21.23	25.55	22.77
DCs:		**1990**	**1991**	**1992**	**1993**	**1994**	**1995**
Australia	Mean	18.09	16.77	17.14	17.62	20.86	17.59
	Median	9.64	11.49	9.99	12.46	13.57	12.63
	Std.dev	21.24	19.19	19.51	16.86	21.48	16.62
Canada	Mean	28.43	31.62	33.58	34.27	32.82	32.61
	Median	22.31	27.56	31.04	30.67	29.36	28.12
	Std. Dev	21.34	21.23	21.58	23.68	21.09	28.12
Japan	Mean	34.68	34.82	36.23	35.40	36.03	34.51
	Median	30.99	30.94	31.03	31.94	34.63	32.53
	Std.dev	22.41	22.62	24.03	21.09	21.16	22.32
New Zealand	Mean	23.55	25.51	23.64	27.17	25.97	25.89
	Median	15.02	19.30	16.82	22.18	17.60	19.30
	Std.dev	24.42	23.37	22.64	22.59	24.14	27.34
United States	Mean	45.86	47.72	48.30	46.63	49.19	48.10
	Median	49.92	51.63	53.32	48.57	50.52	51.70
	Std. Dev	21.81	21.06	21.11	22.02	21.29	21.75
Former USSR:							
Estonia	Mean	--	--	45.81	29.07	30.88	28.79
	Median	--	--	41.43	26.43	27.31	27.32
	Std.dev	--	--	23.47	20.97	21.10	20.58
Latvia	Mean	--	--	37.65	34.59	35.24	29.04
	Median	--	--	43.15	31.50	24.61	18.08
	Std.dev	--	--	28.18	24.81	29.07	27.95
Lithuania	Mean	--	--	40.62	25.56	29.88	28.08
	Median	--	--	34.58	20.43	22.43	21.62
	Std.dev	--	--	29.45	22.57	26.83	23.39
Moldova	Mean	--	--	60.30	48.05	22.31	37.69
	Median	--	--	69.64	43.45	13.08	29.45
	Std.dev	--	--	34.18	25.04	21.29	26.65

Table 3A: Horizontal Intra-Industry Trade (±15% range) with EU(9)
(109 3-digit NACE sectors)

COUNTRY		1990	1991	1992	1993	1994	1995
CEEC:							
Albania	Mean	11.43	3.65	3.66	5.59	5.29	6.34
	Median	0.00	0.00	0.00	0.00	0.00	0.00
	Std. Dev	26.53	11.33	13.19	17.37	16.37	14.95
Bulgaria	Mean	1.12	1.21	4.13	4.50	2.15	1.88
	Median	0.00	0.00	0.00	0.00	0.00	0.00
	Std. Dev	4.54	3.24	11.55	13.82	6.75	6.19
Czechoslovakia	Mean	4.33	4.28	5.33	--	--	--
	Median	0.00	0.00	0.34	--	--	--
	Std. Dev	12.84	11.70	10.44	--	--	--
Czech Republic	Mean	--	--	--	4.59	6.83	7.63
	Median	--	--	--	0.18	0.85	1.59
	Std. Dev	--	--	--	11.47	13.00	11.87
Slovak Republic	Mean	--	--	--	4.96	4.30	4.91
	Median	--	--	--	0.00	0.00	0.00
	Std. Dev	--	--	--	12.40	12.61	13.03
Hungary	Mean	3.54	4.00	2.93	4.74	5.73	4.79
	Median	0.00	0.11	0.49	1.08	1.45	1.00
	Std. Dev	11.31	10.72	5.54	10.77	9.93	8.21
Poland	Mean	3.27	3.08	3.42	2.70	6.01	3.35
	Median	0.15	0.05	0.07	0.54	0.18	0.33
	Std. Dev	7.12	8.00	8.11	5.93	15.17	8.27
Romania	Mean	2.33	4.61	1.19	3.51	3.29	3.74
	Median	0.00	0.00	0.00	0.00	0.04	0.00
	Std. Dev	8.14	16.18	4.68	10.99	9.65	14.27
Slovenia	Mean	--	--	4.86	6.28	6.37	8.65
	Median	--	--	0.55	0.53	0.47	0.81
	Std.dev	--	--	12.58	12.33	12.00	16.94
EU/EFTA:							
Austria	Mean	18.80	18.29	17.99	16.00	17.75	16.94
	Median	11.80	10.01	10.00	10.85	11.87	11.07
	Std. Dev	20.63	19.80	20.76	16.45	18.19	18.72
Finland	Mean	6.70	6.11	6.32	7.47	10.00	5.75
	Median	2.16	1.13	1.26	2.07	1.29	0.97
	Std. Dev	13.32	10.56	9.45	12.37	17.77	9.47
Greece	Mean	5.00	5.51	4.25	3.11	4.31	4.45
	Median	0.93	1.32	0.10	0.04	0.37	0.40
	Std. Dev	9.85	10.39	8.38	7.74	10.52	9.63
Portugal	Mean	5.55	5.31	8.13	7.83	9.68	6.18
	Median	0.80	1.01	2.29	2.10	1.50	1.29
	Std. Dev	10.37	10.18	14.82	13.41	19.00	11.58
Spain	Mean	13.16	13.30	13.90	15.05	14.05	11.65
	Median	5.11	9.30	8.52	9.80	8.91	4.88
	Std. Dev	16.31	14.97	15.63	16.12	14.55	15.77
Switzerland	Mean	13.41	13.10	11.93	11.36	12.36	13.14
	Median	8.92	7.70	7.19	5.29	4.48	7.52
	Std. Dev	16.83	16.86	15.44	15.13	16.05	16.60
MENA:		**1990**	**1991**	**1992**	**1993**	**1994**	**1995**
Egypt	Mean	1.24	1.56	2.80	2.03	4.82	0.81
	Median	0.00	0.00	0.00	0.00	0.01	0.00
	Std.dev	4.34	4.07	11.48	5.01	16.36	2.61
Israel	Mean	5.12	5.82	6.19	4.86	3.84	5.71
	Median	0.14	0.30	0.72	0.41	0.49	1.09
	Std. Dev	13.46	14.29	14.17	9.72	6.55	9.42
Morocco	Mean	1.90	0.87	1.33	1.15	0.91	2.28
	Median	0.00	0.00	0.00	0.00	0.00	0.00
	Std. Dev	6.42	2.34	3.33	2.34	2.23	9.31
Tunisia	Mean	2.41	4.66	2.32	3.39	2.93	4.58
	Median	0.00	0.31	0.09	0.00	0.00	0.09
	Std. Dev	8.48	12.27	7.78	8.24	8.09	11.67
Turkey	Mean	3.97	1.93	3.04	2.42	3.09	1.80
	Median	0.01	0.04	0.28	0.00	0.36	0.01
	Std. Dev	9.58	3.80	5.33	9.87	6.14	4.19

NICs:							
Indonesia	Mean	2.50	0.63	0.91	1.46	1.26	2.36
	Median	0.00	0.00	0.00	0.00	0.00	0.00
	Std. Dev	9.88	1.80	2.78	4.81	3.86	10.20
Korea	Mean	1.75	1.47	1.98	1.19	3.73	3.56
	Median	0.00	0.04	0.00	0.00	0.00	0.19
	Std. Dev	4.79	3.38	5.77	2.72	8.84	8.58
Malaysia	Mean	3.02	2.41	2.92	1.41	0.71	1.37
	Median	0.00	0.00	0.00	0.00	0.00	0.00
	Std. Dev	9.79	13.00	9.88	4.19	1.73	4.58
Taiwan	Mean	2.29	1.79	1.42	1.57	2.53	3.04
	Median	0.00	0.00	0.05	0.00	0.00	0.00
	Std. Dev	7.96	5.94	5.40	4.71	6.48	7.56
South America:							
Argentina	Mean	2.29	2.53	2.44	4.63	1.81	2.13
	Median	0.00	0.00	0.00	0.00	0.00	0.00
	Std. Dev	7.59	7.29	6.75	11.62	6.11	5.90
Brazil	Mean	1.51	2.40	1.82	2.52	2.22	2.67
	Median	0.00	0.00	0.00	0.00	0.06	0.02
	Std. Dev	4.23	7.31	4.16	5.80	5.00	5.85
Chile	Mean	3.94	5.24	0.46	1.29	2.42	2.26
	Median	0.00	0.00	0.00	0.00	0.00	0.00
	Std. Dev	15.44	17.64	1.64	5.31	8.84	11.20
South Asia:							
Bangladesh	Mean	0.03	0.77	8.50	0.21	3.80	2.69
	Median	0.00	0.00	0.00	0.00	0.00	0.00
	Std.dev	0.09	2.56	22.43	0.61	18.11	11.36
India	Mean	2.82	4.02	3.18	5.07	2.21	4.83
	Median	0.00	0.00	0.00	0.13	0.19	0.09
	Std.dev	10.03	13.62	9.18	13.75	4.42	14.52
Pakistan	Mean	1.32	0.57	1.49	2.01	3.61	2.85
	Median	0.00	0.00	0.00	0.00	0.00	0.00
	Std.dev	5.73	1.45	4.73	7.78	8.86	10.69
DCs:		**1990**	**1991**	**1992**	**1993**	**1994**	**1995**
Australia	Mean	3.98	2.42	3.23	2.32	1.71	1.58
	Median	0.17	0.05	0.01	0.06	0.12	0.08
	Std.dev	10.48	4.99	10.92	7.40	4.88	3.19
Canada	Mean	5.47	4.96	6.29	6.10	7.92	5.12
	Median	0.77	0.74	0.85	1.61	1.06	1.27
	Std.dev	10.36	8.20	15.41	12.08	14.55	1.27
Japan	Mean	5.74	3.93	3.96	5.76	5.03	6.07
	Median	1.42	0.45	0.68	0.83	0.97	0.60
	Std.dev	11.42	7.52	7.74	9.77	8.47	10.61
New Zealand	Mean	4.69	3.31	2.71	2.29	2.83	1.76
	Median	0.02	0.00	0.00	0.00	0.00	0.00
	Std.dev	14.83	8.05	7.41	5.86	6.72	4.69
United States	Mean	8.12	9.65	13.12	9.35	10.30	11.19
	Median	2.76	3.64	8.20	3.02	4.18	4.99
	Std.dev	13.27	14.54	14.80	14.42	13.71	14.37
Former USSR:							
Estonia	Mean	--	--	9.43	2.12	2.06	5.70
	Median	--	--	0.00	0.00	0.00	0.00
	Std.dev	--	--	22.97	6.69	7.02	14.57
Latvia	Mean	--	--	0.72	4.94	3.77	3.02
	Median	--	--	0.00	0.00	0.00	0.00
	Std.dev	--	--	2.51	13.97	13.60	7.58
Lithuania	Mean	--	--	3.47	3.76	1.63	2.27
	Median	--	--	0.00	0.00	0.00	0.00
	Std.dev	--	--	14.32	14.69	5.84	6.87
Moldova	Mean	--	--	7.17	0.13	0.86	1.06
	Median	--	--	0.00	0.00	0.00	0.00
	Std.dev	--	--	24.84	0.52	2.42	3.99

Table 4A: Vertical Intra-Industry Trade (±15% range) with EU(9)
(109 3-digit NACE sectors)

COUNTRY		1990	1991	1992	1993	1994	1995
CEEC:							
Albania	Mean	37.04	30.21	32.16	35.63	33.03	28.15
	Median	33.06	28.16	21.76	26.30	25.58	16.81
	Std. Dev	32.79	28.08	32.25	30.88	30.55	28.50
Bulgaria	Mean	26.83	29.66	24.67	28.82	28.89	22.70
	Median	22.33	22.83	20.51	20.00	24.61	18.06
	Std. Dev	21.54	20.72	18.77	23.85	23.67	18.55
Czechoslovakia	Mean	27.24	32.54	35.72	--	--	--
	Median	24.91	31.53	32.49	--	--	--
	Std. Dev	19.88	23.12	23.28	--	--	--
Czech Republic	Mean	--	--	--	39.28	36.60	36.05
	Median	--	--	--	39.09	35.35	35.22
	Std. Dev	--	--	--	23.02	23.67	22.30
Slovak Republic	Mean	--	--	--	30.02	29.16	24.50
	Median	--	--	--	24.14	27.00	19.33
	Std. Dev	--	--	--	23.42	21.47	19.74
Hungary	Mean	32.89	31.84	31.50	29.91	29.80	28.31
	Median	28.09	28.02	32.45	28.78	29.23	23.93
	Std. Dev	22.03	20.24	19.37	19.76	17.55	19.48
Poland	Mean	25.86	25.79	24.61	26.28	23.00	26.33
	Median	23.37	20.02	22.61	20.59	18.02	18.49
	Std. Dev	19.58	20.75	17.37	21.65	19.06	21.12
Romania	Mean	23.55	22.94	26.01	24.96	23.93	22.00
	Median	14.47	16.64	21.29	19.31	17.10	15.89
	Std. Dev	24.29	20.20	19.85	22.63	22.36	20.95
Slovenia	Mean	--	--	32.67	27.38	30.50	28.70
	Median	--	--	30.24	25.11	28.33	24.01
	Std.dev	--	--	19.52	18.68	21.60	19.65
EU/EFTA:							
Austria	Mean	31.57	31.94	32.57	34.46	33.30	30.08
	Median	30.32	29.05	31.55	34.23	28.99	26.50
	Std. Dev	19.28	19.47	19.70	20.61	21.24	18.24
Finland	Mean	26.38	28.78	29.54	27.88	24.64	25.96
	Median	21.28	22.80	24.36	24.72	21.10	26.10
	Std. Dev	21.06	21.27	22.35	19.28	18.68	17.77
Greece	Mean	20.69	20.26	19.77	17.49	18.68	18.05
	Median	12.43	13.60	13.88	11.41	13.30	11.03
	Std. Dev	21.83	18.89	19.80	14.97	17.10	18.04
Portugal	Mean	24.73	27.08	23.36	22.29	20.48	24.29
	Median	17.02	20.86	20.66	17.85	15.78	21.20
	Std. Dev	21.48	24.19	20.51	19.62	19.22	20.83
Spain	Mean	37.32	34.62	33.80	33.88	36.48	39.65
	Median	35.13	35.35	30.44	32.01	35.35	41.91
	Std. Dev	21.62	19.32	18.41	19.20	21.39	21.37
Switzerland	Mean	37.92	38.88	40.96	41.86	40.33	39.17
	Median	34.62	36.64	41.28	40.77	38.23	38.96
	Std. Dev	20.75	20.82	20.09	20.37	19.66	18.97
MENA:		1990	1991	1992	1993	1994	1995
Egypt	Mean	19.87	18.53	16.56	20.67	17.23	23.69
	Median	13.50	11.87	12.07	10.91	9.03	14.67
	Std.dev	18.97	19.08	15.17	22.63	20.59	25.96
Israel	Mean	28.95	24.46	27.42	26.71	25.84	27.44
	Median	22.76	16.88	22.49	21.90	21.77	24.45
	Std. Dev	23.74	21.58	22.18	22.72	21.26	21.87
Morocco	Mean	19.27	18.99	15.97	17.23	17.94	16.43
	Median	9.54	8.23	8.14	7.85	8.24	10.56
	Std. Dev	23.16	22.10	19.42	20.05	20.64	19.21
Tunisia	Mean	25.89	22.22	26.53	22.52	18.20	20.29
	Median	17.81	12.77	18.75	12.89	11.99	11.81
	Std. Dev	24.41	23.18	25.63	23.27	18.10	21.19
Turkey	Mean	24.79	24.68	23.36	22.78	25.11	27.25
	Median	15.16	19.03	17.55	18.24	21.79	17.83
	Std. Dev	24.55	23.35	20.30	21.72	19.89	24.07

NICs:							
Indonesia	Mean	17.05	15.12	16.88	15.97	21.52	15.60
	Median	8.95	8.31	9.98	8.68	14.11	8.36
	Std. Dev	18.85	15.82	18.00	19.74	23.53	16.86
Korea	Mean	24.59	21.88	23.76	25.12	24.65	27.30
	Median	21.37	21.98	19.25	19.98	21.11	24.35
	Std. Dev	19.47	13.85	18.05	19.20	18.50	19.97
Malaysia	Mean	22.25	24.80	24.02	26.76	26.71	25.52
	Median	15.15	15.52	15.02	18.12	19.79	22.68
	Std. Dev	22.89	24.48	23.03	25.10	23.39	23.13
Taiwan	Mean	23.57	21.38	23.22	24.29	24.56	26.76
	Median	19.06	15.97	18.52	19.83	23.32	23.41
	Std. Dev	21.64	19.35	18.59	20.90	20.52	21.02
South America:							
Argentina	Mean	26.61	23.87	21.83	19.04	19.07	19.01
	Median	21.04	20.02	18.02	10.75	8.95	9.36
	Std. Dev	22.24	18.72	19.15	22.81	19.78	20.21
Brazil	Mean	30.25	26.37	25.07	25.45	28.93	20.11
	Median	28.20	23.51	20.78	20.59	23.76	17.06
	Std. Dev	25.00	21.95	20.78	21.63	22.69	16.17
Chile	Mean	22.06	27.15	26.45	21.91	23.69	18.19
	Median	8.75	15.73	12.97	9.02	9.30	7.14
	Std. Dev	26.41	28.53	28.36	24.97	26.94	23.90
South Asia:							
Bangladesh	Mean	34.70	16.97	24.03	21.35	21.04	20.41
	Median	29.09	6.21	16.52	17.11	15.56	15.88
	Std.dev	29.89	23.14	27.39	24.40	20.90	21.83
India	Mean	24.27	20.43	22.52	22.06	21.85	24.26
	Median	18.86	15.11	17.72	18.03	17.71	18.93
	Std. Dev	22.70	18.99	20.68	23.31	19.34	22.87
Pakistan	Mean	20.39	18.19	15.77	17.51	19.56	17.23
	Median	8.28	9.46	6.69	6.34	7.50	7.81
	Std.dev	22.30	20.24	20.15	21.21	25.70	21.89
DCs:		**1990**	**1991**	**1992**	**1993**	**1994**	**1995**
Australia	Mean	14.11	14.36	13.91	15.30	19.15	16.01
	Median	7.24	8.73	9.28	10.83	12.26	11.66
	Std. Dev	19.97	19.15	16.33	15.85	21.15	16.03
Canada	Mean	22.96	26.66	27.30	28.18	24.90	27.49
	Median	17.94	20.54	22.53	21.57	22.19	20.53
	Std.dev	19.46	21.24	20.82	22.69	18.96	20.53
Japan	Mean	28.95	30.88	32.27	29.64	31.00	28.44
	Median	23.64	24.87	26.86	24.38	27.81	27.17
	Std. Dev	22.40	22.72	24.48	19.82	21.28	20.69
New Zealand	Mean	18.86	22.21	20.93	24.88	23.14	24.13
	Median	12.42	13.78	12.20	16.73	13.65	11.97
	Std. Dev	22.01	22.65	22.23	22.80	23.80	26.48
United States	Mean	37.74	38.07	35.18	37.28	38.89	36.91
	Median	36.83	38.66	35.86	38.25	42.01	36.37
	Std.dev	21.67	20.70	19.68	19.40	19.99	19.70
Former USSR:							
Estonia	Mean	--	--	36.38	26.95	28.82	23.09
	Median	--	--	36.19	20.74	26.13	21.73
	Std. Dev	--	--	24.55	21.54	22.22	18.45
Latvia	Mean	--	--	36.93	29.65	31.47	26.02
	Median	--	--	42.75	24.72	19.58	15.64
	Std. Dev	--	--	28.19	23.36	28.85	28.00
Lithuania	Mean	--	--	37.15	21.80	28.25	25.81
	Median	--	--	28.72	19.60	21.87	18.64
	Std. Dev	--	--	29.59	19.52	25.96	23.81
Moldova	Mean	--	--	53.13	47.92	21.44	36.64
	Median	--	--	58.45	43.45	12.18	24.48
	Std.dev	--	--	37.18	25.25	21.92	27.01

Table 5A: Horizontal Intra-Industry Trade (±25% range) with EU(9)
(109 3-digit NACE sectors)

COUNTRY		1990	1991	1992	1993	1994	1995
		(%)	(%)	(%)	(%)	(%)	(%)
CEEC:							
Bulgaria	Mean	2.90	3.51	5.95	7.07	3.27	2.83
	Median	0.00	0.00	0.82	0.73	0.00	0.03
	Std. Dev	7.77	6.87	11.93	16.34	7.99	6.62
Czechoslovakia	Mean	5.00	6.99	8.57	--	--	--
	Median	0.49	1.56	2.10	--	--	--
	Std. Dev	12.35	12.48	12.69	--	--	--
Czech Republic	Mean	--	--	--	9.35	11.64	11.50
	Median	--	--	--	2.35	4.11	2.80
	Std. Dev	--	--	--	14.40	17.19	17.16
Slovak Republic	Mean	--	--	--	7.02	7.00	6.30
	Median	--	--	--	0.70	0.40	0.83
	Std. Dev	--	--	--	13.99	15.48	13.08
Hungary	Mean	4.84	6.77	8.86	8.01	8.67	7.61
	Median	0.88	2.04	2.97	2.05	3.09	3.17
	Std. Dev	11.54	12.53	13.28	12.92	12.56	9.51
Moldova	Mean	--	--	12.01	0.13	1.47	5.38
	Median	--	--	0.00	0.00	0.00	0.00
	Std.dev	--	--	28.68	0.52	2.85	16.36
Poland	Mean	4.61	6.03	6.29	6.99	8.29	8.00
	Median	0.73	1.00	1.16	1.53	1.61	0.87
	Std. Dev	8.09	11.39	10.01	15.24	15.16	14.66
Romania	Mean	2.24	4.90	2.72	8.37	4.04	5.84
	Median	0.00	0.00	0.00	0.91	0.20	0.23
	Std. Dev	8.07	15.73	9.32	18.98	9.36	15.09
Slovenia	Mean	--	--	8.13	9.50	11.48	13.36
	Median	--	--	2.30	2.86	4.37	5.46
	Std.dev	--	--	14.81	14.69	15.59	18.83

Table 6A: Vertical Intra-Industry Trade (±25% range) with EU(9)
(109 3-digit NACE sectors)

COUNTRY		1990	1991	1992	1993	1994	1995
		(%)	(%)	(%)	(%)	(%)	(%)
CEEC:							
Bulgaria	Mean	26.29	27.76	23.57	28.11	29.19	21.75
	Median	22.03	21.93	17.13	19.92	23.81	18.00
	Std. Dev	22.58	21.31	18.39	25.46	25.16	18.25
Czechoslovakia	Mean	27.08	30.43	33.41	--	--	--
	Median	25.47	30.02	31.07	--	--	--
	Std. Dev	20.61	23.77	22.69	--	--	--
Czech Republic	Mean	--	--	--	34.90	32.52	32.76
	Median	--	--	--	34.69	32.53	31.63
	Std. Dev	--	--	--	23.78	22.84	23.21
Slovak Republic	Mean	--	--	--	28.31	27.02	23.22
	Median	--	--	--	23.36	24.66	15.95
	Std. Dev	--	--	--	23.98	21.18	19.86
Hungary	Mean	31.87	29.69	26.57	27.41	27.63	25.29
	Median	26.62	26.97	24.53	26.38	26.17	21.65
	Std. Dev	22.17	20.23	18.03	18.26	17.48	17.92
Moldova	Mean	--	--	48.29	47.92	20.84	32.31
	Median	--	--	47.06	43.45	11.80	21.40
	Std.dev	--	--	35.37	25.25	22.40	27.47
Poland	Mean	24.31	23.56	22.18	22.97	21.89	21.79
	Median	23.41	18.20	19.65	18.64	16.49	14.77
	Std. Dev	18.98	19.92	17.82	20.32	19.98	19.56
Romania	Mean	22.81	22.73	27.29	22.39	23.53	19.48
	Median	14.47	13.48	21.29	16.71	17.98	12.77
	Std. Dev	24.48	22.24	22.46	22.20	22.52	20.08
Slovenia	Mean	--	--	29.39	24.16	25.39	23.99
	Median	--	--	26.00	22.04	24.20	19.91
	Std.dev	--	--	19.45	17.80	19.13	18.06

Policy Research Working Paper Series

	Title	Author	Date	Contact for paper
WPS1828	The Determinants of Banking Crises: Evidence from Developed and Developing Countries	Asli Demirgüç-Kunt Enrica Detragiache	September 1997	P. Sintim-Aboagye 38526
WPS1829	Economic Reform and progress in Latin America and the Caribbean	Norman Loayza Luisa Palacios	September 1997	E. Khine 37471
WPS1830	Private Ownership and Corporate Performance: Some Lessons from Transition Economies	Roman Frydman Cheryl W. Gray Marek Hessel Andrzej Rapaczynski	September 1997	B. Moore 38526
WPS1831	How Trade Patterns and Technology Flows Affect Productivity Growth	Wolfgang Keller	September 1997	J. Ngaine 37947
WPS1832	Pension Reform in Bolivia: Innovative Solutions to Common Problems	Hermann von Gersdorff	September 1997	C. Pavlak 82099
WPS1833	Cost Recovery and Pricing of Payment Services	David B. Humphrey Robert H. Keppler Fernando Montes-Negret	October 1997	T. Ishibe 38968
WPS1834	The Comparative Advantage of Government: A Review	Pedro Belli	October 1997	L. Schunk 31779
WPS1835	Cost-Benefit Analysis of the Global Dracunculiasis Eradication Campaign	Aehyung Kim Ajay Tandon Ernesto Ruiz-Tiben	October 1997	A. Kim 35029
WPS1836	Health and Labor Productivity: The Economic Impact of Onchocercal Skin Disease	Aehyung Kim Ajay Tandon Asrat Hairu and Others	October 1997	A. Kim 35029
WPS1837	How Estonia's Economic Transition Affected Employment and Wages (1989–95)	Rivo Noorkoiv Peter F. Orazem Allan Puur Milan Vodopivec	October 1997	S. Fallon 38009
WPS1838	The Limits and Merits of Participation	Paulo Vieira da Cunha Maria Valeria Junho Pena	October 1997	E. Thomas 31019
WPS1839	The Effects of Financial Liberalization and New Bank Entry on Market Structure and Competition in Turkey	Cevdet Denizer	November 1997	E. Khine 37471
WPS1840	Efficient Public Sector Downsizing	Martin Rama	November 1997	S. Fallon 38009
WPS1841	Patterns of Metropolitan Development: What Have We Learned?	Gregory K. Ingram	November 1997	J. Ponchamni 31052

Policy Research Working Paper Series

	Title	Author	Date	Contact for paper
WPS1842	Motorization and the Provision of Roads in Countries and Cities	Gregory K. Ingram Zhi Liu	November 1997	J. Ponchamni 31052
WPS1843	Externalities and Bailouts: Hard and Soft Budget Constraints in Intergovernmental Fiscal Relations	David E. Wildasin	November 1997	C. Bernardo 37699
WPS1844	Child Labor and Schooling in Ghana	Sudharshan Canagarajah Harold Coulombe	November 1997	B. Casely-Hayford 34672
WPS1845	Employment, Labor Markets, and Poverty in Ghana: A Study of Changes during Economic Decline and Recovery	Sudharshan Canagarajah Dipak Mazumdar	November 1997	B. Casely-Hayford 34672
WPS1846	Africa's Role in Multilateral Trade Negotiations	Zhen Kun Wang L. Alan Winters	November 1997	J. Ngaine 37947
WPS1847	Outsiders and Regional Trade Agreements among Small Countries: The Case of Regional Markets	Anju Gupta Maurice Schiff	November 1997	J. Ngaine 37947
WPS1848	Regional Integration and Commodity Tax Harmonization	Valeria De Bonis	November 1997	J. Ngaine 37947
WPS1849	Regional Integration and Factor Income Taxation	Valeria De Bonis	November 1997	J. Ngaine 37947